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# Off-site manufacture in Australian *Barriers and opportunities*

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# Offsite Manufacture in Australia



- CRC Construction Innovation
- Report on the current state and future opportunities of OSM in Australian construction
- Workshops, interviews, case studies
  - NSW, QLD, VIC, WA



# The industry's views

Details	Melbourne [VIC]	Perth [WA]	Brisbane [QLD]	TOTALS
Date workshop conducted	12 <sup>th</sup> December 2006	22 <sup>nd</sup> February 2007	23 <sup>rd</sup> February 2007	-
Venue	State Library Conf. Centre	Dept of Housing & Works	Qld Dept. of Works	-
Number attended	12	8	29	45*
<i>Researchers</i>	3	4	6	9*
<i>Client (Public)</i>	1	0	5	6
<i>Designer</i>	0	1	2	3
<i>Constructor</i>	4	3	1	8
<i>Supplier</i>	3	0	10	13
<i>Other</i>	1	0	5	6

Case number	1	2	3	4	5	6	7	Total
State	WA	VIC	NSW	QLD	QLD	VIC	QLD	-
Type (see Ch. 2)	2	2	3	4	2	2	2,4	-
Number interviewed	1	4	3	6	3	2	2	21
<i>Client</i>	-	-	-	2	-	-	-	2
<i>Designer</i>	-	-	1	-	-	-	-	1
<i>Constructor</i>	1	4	1	1	-	-	-	7
<i>Supplier</i>	-	(4)	-	3	3	2	2	10
<i>Other</i>	-	-	1	-	-	-	-	1

Details	Victoria	NSW	WA	TOTALS
Number interviewed	1	2	15	18
<i>Client (Public)</i>	-	-	-	0
<i>Designer</i>	-	-	7	7
<i>Constructor</i>	1	-	6	6
<i>Supplier</i>	-	2	1	3
<i>Other</i>	-	-	1	1



## Off-site manufacture in Australia: Current state and future directions



Featuring seven case studies



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## Off-site manufacture in Australia: Current state and future directions

Project Partners

Industry

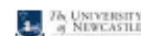


Government



Department of Housing and Works

Research



October 2007



Established and  
operating under  
the Australian  
Government's  
Cooperative  
Research Centre  
Program

ISBN 070-0-9804261-8-1



# Why consider OSM?

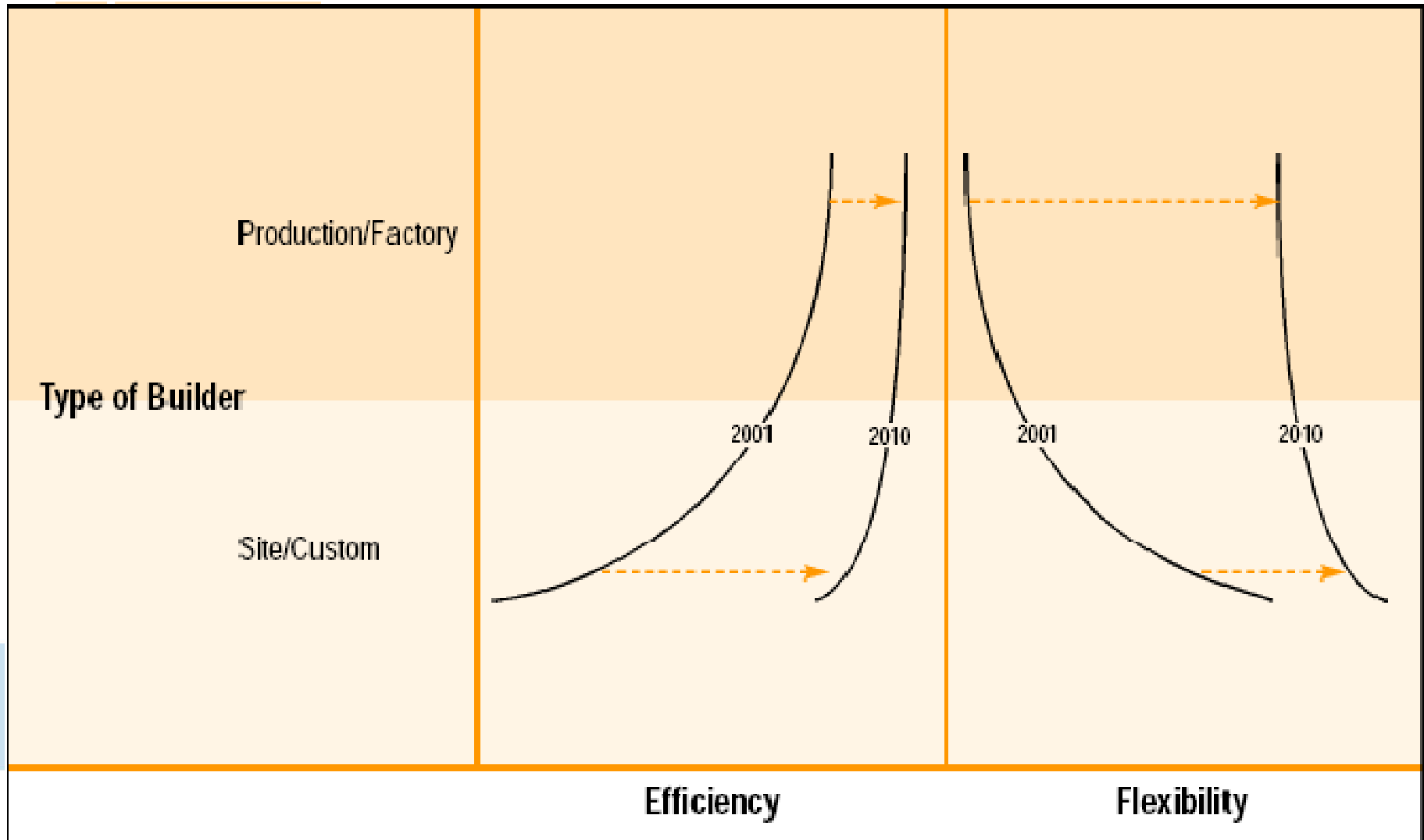


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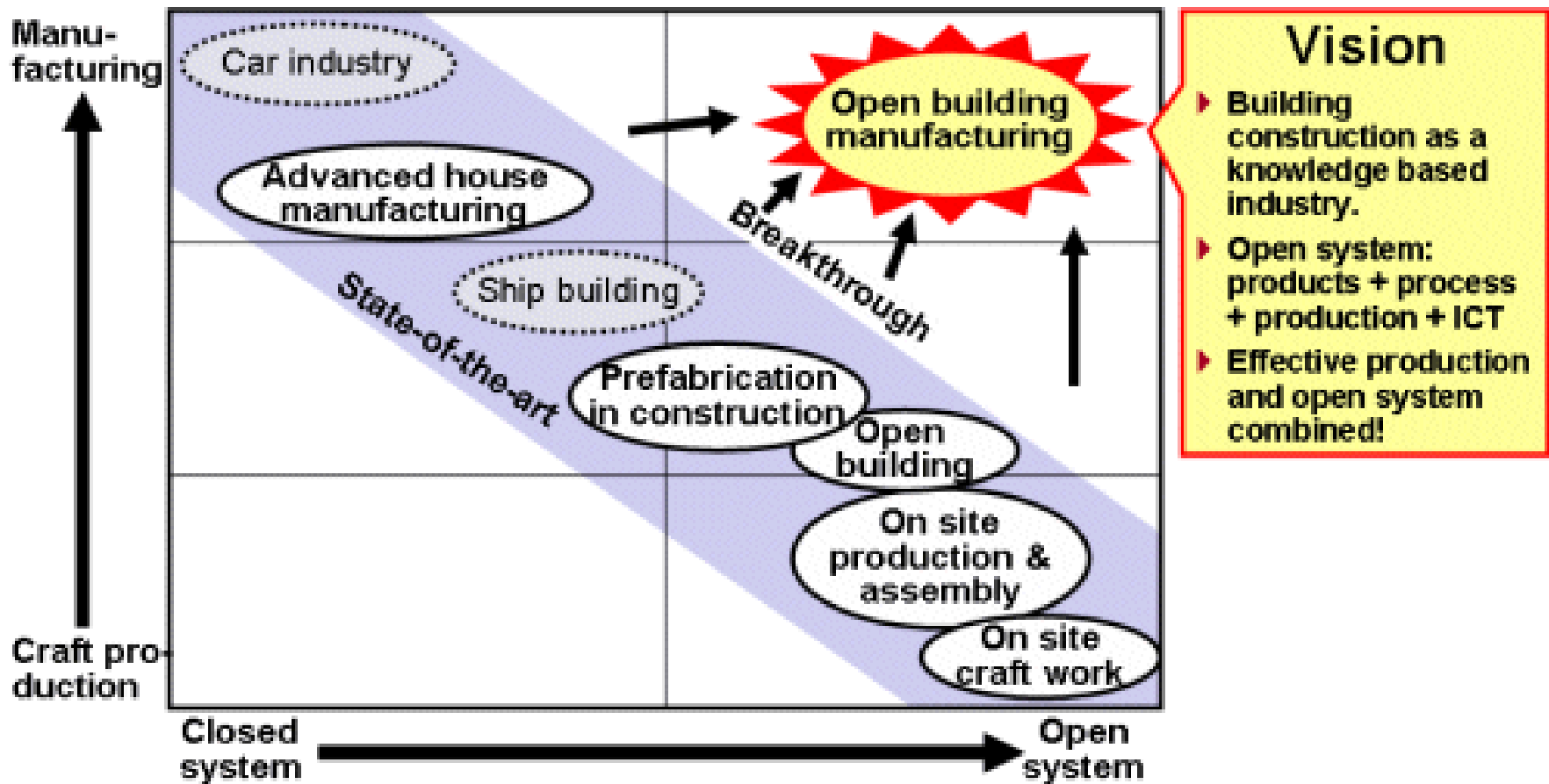
# Why offsite manufacture?

Source: Technology Roadmap: Whole house and Building Process Redesign, PATH (2002)



# Why offsite manufacture?

*“inspirational unconstrained building design ...combined with highly efficient industrialised production”*







# Drivers and constraints to OSM in Australia



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# Drivers for offsite in Australia

## Processes and management

- reduce construction time
- simplify construction processes
- provide fewer trades and interfaces to manage and coordinate on site

## Quality

- provide higher quality, better control and more consistency
- produce products that are factory tried and tested

## Costs

- reduce costs when resources are scarce, or in remote areas

## OHS

- result in improved working conditions
- reduce on-site risks

## Skills

- alleviate skills shortages in certain centres

## Other

- revitalise 'traditional' manufacturing regions
- reduce waste on and off site
- improve housekeeping on site
- facilitate the incorporation of sustainable solutions
- achieve better energy performance.





Monarch Building systems





Courtesy Hollow Core





# Constraints to offsite in Australia

## Process

- lengthened lead times
- need to fix designs at an earlier stage of the project process
- need to specifically design products and building components
- very low IT integration in the construction industry
- high fragmentation in the industry
- interface problems on site due to low tolerances
- difficult and expensive long distance transport for large, heavy loads

## Cost

- appears expensive when compared to traditional methods
- high set-up costs

## Regulation

- restrictive regulations, especially between geographic jurisdictions
- a lack of codes and standards

## Perception

- a negative stigma and pessimism based on past failures
- union resistance
- a perception that it is restrictive and unable to deliver customer desires
- difficulties in financing

## Supply

- loss of control on site and into the supply chain
- limited capacity of suppliers
- inter-manufacturer rivalry and protection
- difficulties in inventory control
- low quality imports

## OHS

- possible increased consequences of incidents

## Skills/Knowledge

- a lack of professionals skilled in OSM
- a lack of manufacturer/supplier skills lack of a knowledge portal









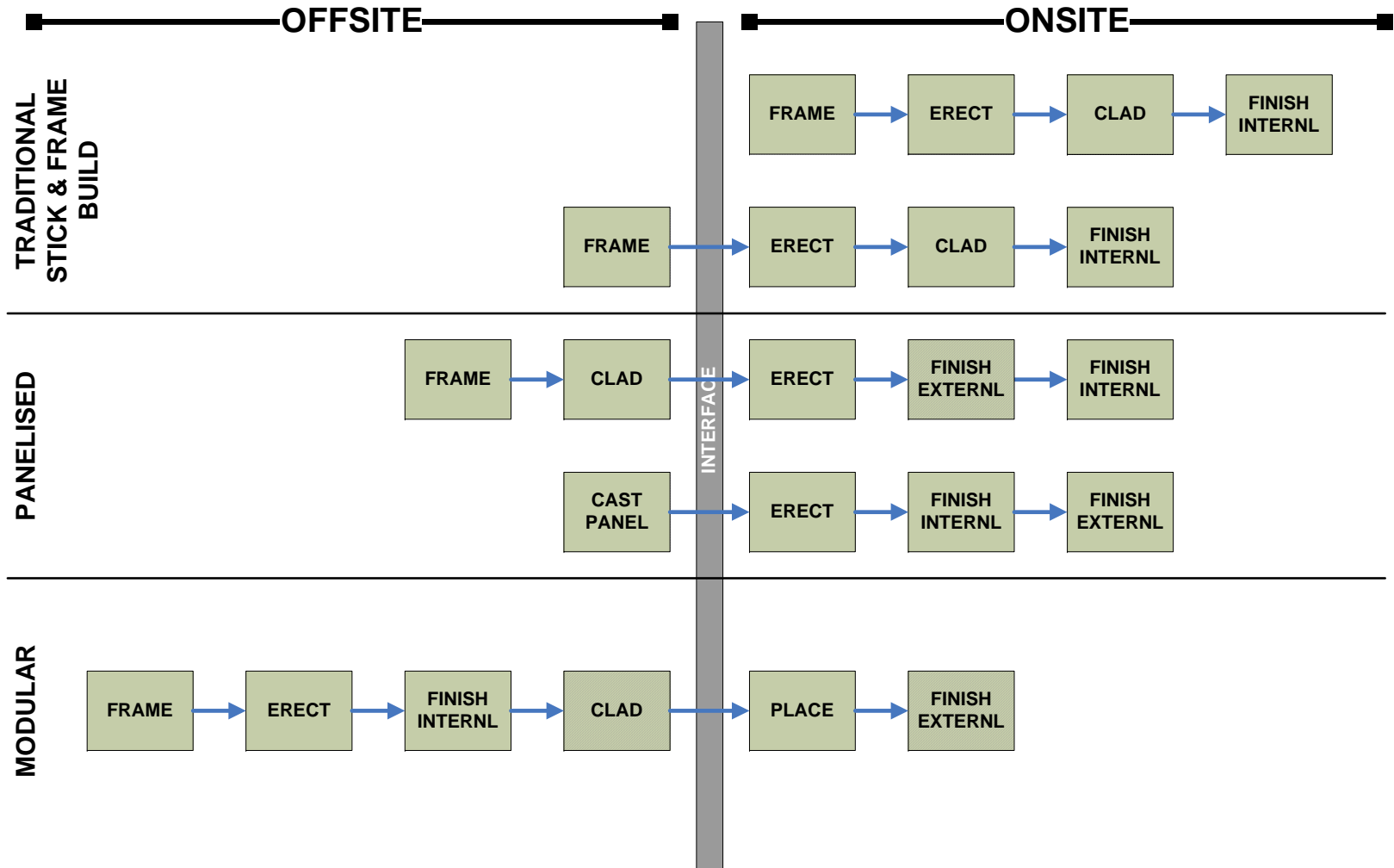


# Future Directions



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# Manufacture and Interface control – Housing example



# Offsite Manufacture for Housing



An Australian Government Initiative

AusIndustry



CEMENT CONCRETE  
& AGGREGATES AUSTRALIA

RMIT University



Adelaide Brighton Ltd



Hanson

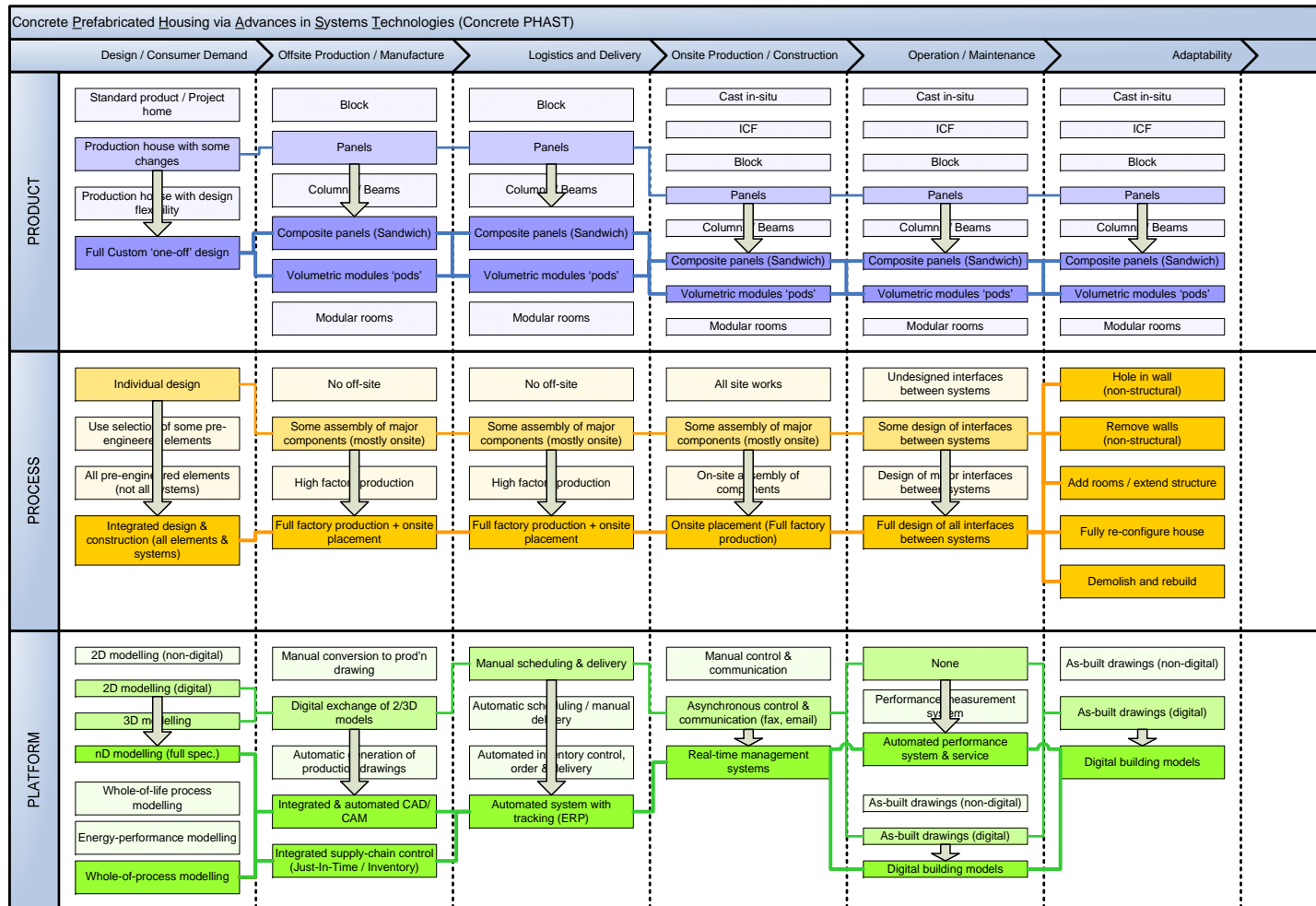
RINKER™

- AusIndustry - Industry Cooperative Innovation Program (ICIP)
  - Concrete Prefabricated Housing via Advances in Systems Technologies (Concrete PHAST)
- Produce Technology Roadmap for Manufactured House
  - NSW, QLD, SA, VIC, WA



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# Integration - Technology Roadmap



Roadmap - BASE MAP - Ver 6.0



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